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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------|-------------|----------------------|------------------------|------------------|
| 10/825,186 | 04/16/2004 | John Zeng Hui Zhang | 57953/1221 (ZHA01-01) | 8260 |
| 7590 | | 10/12/2007 | | |
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| | | | EXAMINER | |
| | | | SKOWRONEK, KARLHEINZ R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1631 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|--------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/825,186 | ZHANG ET AL. | |
| | Examiner | Art Unit | |
| | Karlheinz R. Skowronek | 1631 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-4, 7-16, 20-27 and 30-44 is/are pending in the application.
- 4a) Of the above claim(s) 39-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-4, 7-16, 20-27, and 30-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The examiner of record has changed. Please direct all further correspondence to Karlheinz R. Skowronek whose telephone number is (571) 272-9047.

Claim Status

Claims 1-4, 7-16, 20-27, and 30-44 are pending.

Claims 5-6 and 17-19 are cancelled.

Claims 39-44 stand withdrawn as being directed to a non-elected invention.

Claims 1-4, 7-16, 20-27, and 30-38 are being examined.

Specification

Response to Arguments

Applicant's arguments, see p.12-13, filed 23 July 2007, with respect to the objection to the specification for including embedded hyperlinks have been fully considered and are persuasive. The objection of specification has been withdrawn.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 16 and 20-26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are directed to a computer readable medium having instructions stored thereon. The instructions as claimed encompass both functional as well as non-functional descriptive material. Non-functional descriptive material stored on a tangible computer readable medium is not

eligible for patent protection because the non-functional descriptive material itself does not impart functionality and thereby become functionally interrelated to the computer , the claim is rejected under 35 USC 101.

Response to Arguments

Applicant's arguments, see p. 13, filed 23 July 2007, with respect to claims 1-38 as rejected under 35 USC 101 have been fully considered and are persuasive. The rejection of claims 1-38 has been withdrawn.

Claim Rejections - 35 USC § 112

First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

WRITTEN DESCRIPTION

This rejection is reiterated from the previous office action.

Claims 1-4, 7-16, 20-27, and 30-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a LACK OF WRITTEN DESCRIPTION rejection.

Claims 1-4, 7-16, 20-27, and 30-38 recite conjugated caps, which are not described by the specification such that one skilled in the art would be apprised of the structure intended. Para 38 discloses that each pair of caps has a first cap member and a second cap member while paragraph 40 discloses that caps are atoms or radicals that bond with a severed portion of a molecule. Neither para 38 nor Para 40 discloses what the relationship of two radicals or atoms (that bond to a severed portion) are to each other such that the two caps are considered to be "conjugated." Para 41 discloses that a first cap may be NH_3^+ and that "other caps" may be $\text{R}_\text{N}\text{C}_\text{a}\text{H}_2$. Para 41 does not disclose or exemplify what the conjugate (second cap member) which corresponds to a first cap member of NH_3^+ actually is. Neither the Figures nor the Examples show, exemplify or otherwise describe what is intended by a "conjugated cap" such that one skilled in the art would know what relationship caps must have to each other to be considered conjugated. As the structure of a pair of conjugated caps is not described or exemplified anywhere such that one skilled in the art would know what structures are intended and what relationship is required for "conjugated caps", the claims lack a full and complete written description and are rejected.

Response to Arguments

Applicant's arguments filed 23 July 2007 have been fully considered but they are not persuasive. Applicant argues that claims have been amended to clarify the function of conjugate caps. The amendments and argument do not clarify what a conjugate cap is. Applicant also does not indicate where in the original disclosure that conjugate cap is fully and completely described. The specification suggest that a cap should mimic as

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much as possible the effect of the original molecular part being cut away from the remaining fragment. However, the specification does not describe how this is accomplished with a single atom.

NEW MATTER

The following rejection is necessitated by amendment.

Claims 1-4, 7-16, 20-27, and 30-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. THIS IS A NEW MATTER REJECTION.

Claim 1, 16, and 27 are directed to a method of calculating an intermolecular interaction energy between two molecules comprising a step of coupling a pair of caps to form one or more conjugated caps. The disclosure as originally filed does not provide written support for the limitation of coupling each pair of caps. The specification does disclose on [0064] the formation of a coupled cap by coupling conjugate caps.

Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 16, and 27 recite the limitation "the second" in line 11 of claim, in line 13 of claim 16, and in line 14 of claim 27. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the molecular portion " in line 2. There is insufficient antecedent basis for this limitation in the claim. The examiner suggests changing "the portion" to "portions" as a potential amendment to overcome this rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karlheinz R. Skowronek whose telephone number is (571) 272-9047. The examiner can normally be reached on Mon-Fri 8:00am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie A. Moran can be reached on (571) 272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10 October 2007

/KRS/

Karlheinz R. Skowronek

Assistant Examiner, Art Unit 1631

John S. Brusca 10 October 2007
JOHN S. BRUSCA, PH.D
PRIMARY EXAMINER